

## **REMARKS/ARGUMENTS**

By the *Office Action* of 9 September 2010, Claims 2-36 are pending in the Application, and all rejected. Applicant thanks Examiner with appreciation for the careful consideration and examination given to the Application.

Applicant submits this *Response and Amendment* solely to facilitate prosecution. As such, Applicant reserves the right to present new or additional claims in this Application that have similar or broader scope as originally filed. Applicant also reserves the right to present additional claims in a later-filed continuation application that have similar or broader scope as originally filed. Accordingly, any amendment, argument, or claim cancellation presented during prosecution is not to be construed as abandonment or disclaimer of subject matter.

No new matter is believed presented in the *Response and Amendment*, and all pending Claims believed allowable.

### **1. The Claim Rejections Under §§ 102/103**

In the *Office Action*, Claims 2-7, 10-17, 19-24, 26-30 and 32-35 are rejected under 35 USC § 103(a) as allegedly being unpatentable over US Patent No. 4,909,086 to Kaneko et al. in view of GB Patent No. 2,312,193 to Searle. Claims 8-9 are rejected under 35 USC § 103(a) as allegedly being unpatentable over Kaneko et al. in view of Searle and further in view of US Patent Publication No. 20030087713 to Todd et al. Claim 18 is rejected under 35 USC § 103(a) as allegedly being unpatentable over Kaneko et al. in view of US Patent No. 5,445,036 to Hordnes et al. Claim 25 is rejected under 35 USC § 103(a) as allegedly being unpatentable over Searle in view of WO 0130643 to Roovers et al.

Initially, the transverse force sensor of the present invention must be capable of measuring a *moving chain*. Further, all of the present claims recite that the transverse force sensor is rotatably mounted, being a *rotary sensing wheel*. (For both of these aspects, see, for example, US Patent Publication 20070099735, ¶[0013]). Additionally, the transverse force sensor is arranged *within the span of the chain*. Lastly, the transverse force sensor is in *force transmitting contact* with the inner side of the chain.

It is respectfully submitted that none of the art, alone or in combination, embody one or

more of the above recitations of all the present Claims.

Further, Claim 4 now recites the embodiment of US Patent Publication 20070099735, ¶[0111], where in the case of bicycles and home trainers, the two chain wheels have mutually different diameters, so that the two chain halves are not mutually parallel. Because of this, the two transverse forces are not in line, with the result that the resultant of the two transverse forces exerts a net moment to, for example, a pulley support, which influences the measurement signal.

The Examiner alleges that he finds in Kaneko et al. a transverse force sensor “arranged within the span of the chain”, referring to a sensor with reference numeral (16), and referring to figure 1. However, reference 16 is not a transverse force sensor as recited in all the pending Claims. Further, it is not a *rotating wheel* as recited in the Claims, nor is it *arranged* within the span of the chain.

Figure 1 is a schematic side view, in which is depicted that a beam 14 supports the frame 13 and has its opposite end fixed to a stationary body 15. For the sake of the picture, the illustrator was looking for a free spot, and he found this within the picture of the chain, but that does not convey the technical information that this beam (and hence the stationary body 15) is actually located within the span of the chain.

The present Claims recite that the transverse force sensor is “*within the span of the chain*”, which means actually within the two dimensional plane in which the chain lies, and figure 1, only, at best, shows a projection.

Apart from that, the sensing element actually touching the chain is a set of two small wheels 11, 12 each located *outside* the span of the chain. Reference 16 indicated the strain gauges mounted on the support beam 14.

All of the present claims recite that the transverse force sensor is rotatably mounted, being a *rotary sensing wheel*; that the transverse force sensor is arranged *within the span of the chain*; and that the transverse force sensor is in *force transmitting contact* with the inner side of the chain. Each of these recitations is missing from Kaneko et al.

Kaneko et al. relates to a robot hand, which is much more delicate than the environment of the present invention, and in use while there is force transmission, the gears are *stationary*.

Further, the hand of Kaneko et al. is powered by a motor, not by human force (Claim 19).

While the illustrating figure of Searle is similar to a figure illustrating the present invention, the operation of the device of Searle is quite different, and patentably distinct. According to Searle, the idler wheel C is movable and operates a switch, which in turn actuates a motor. Thus, the output action is only ON or OFF. Further, in order to be able to operate a switch in a reliable manner, the stroke of the idler wheel (i.e. the displacement distance) must be relatively large, causing a change in the shape of the chain, as clearly shown in **Fig. 1**, and thus disturbing the balance of the chain.

In contrast, the present invention provides an electrical output signal proportional to the force difference between upper chain half and lower chain half, allowing a controller to operate a motor such as to give propulsion force proportional to the chain force, or allowing a trainer to calculate the power generated by the user. By using strain gauges measuring the bending of a supporting arm supporting the measuring wheel, the displacement distance of the measuring wheel can actually be very small, i.e. 0.1 mm or even less, in contrast to the displacement distance of the idler wheel C of Searle, which will be on the order of about 10 mm.

Applicant submits this *Response and Amendment* does not raise new matter issues or raise issues requiring further consideration or searches. It is thus respectfully submitted that the pending Claims are novel and non-obvious over the cited art.

## 2. Fees

This *Response and Amendment* is being filed within six months of the *Office Action*, and more specifically within five months. Thus, a two month extension of time fee payment is believed due.

No additional claim fees are believed due.

Nonetheless, authorization is hereby expressly given to charge any additional fees due to deposit account No. 20-1507.

## CONCLUSION

By the present *Response and Amendment*, this Application has been placed in full condition for allowance. Accordingly, Applicant respectfully requests early and favorable action. Should the Examiner have any further questions or reservations, the Examiner is invited to telephone the undersigned Attorney at 404.885.2773.

Respectfully submitted,

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I hereby certify that this correspondence is being submitted by e-filing to the US Patent and Trademark Office in accordance with §1.8 on this date, via the EFS-Web electronic filing system.

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